

ZOS507 – VERMITECHNOLOGY

Teaching Hours 10 /unit

COURSE OUTCOME

1. The course is structured at the basic level for the benefit of the students coming from different discipline having broad scope for employability.
2. In general soil earthworms, their characteristic features, occurrence, their influence on soil fertility and solid waste management are included.
3. Vermicomposting technology broadly followed at the global level and some Indigenous methods, role of microbes in increasing the soil fertility by the action of earthworms, their advantages and limitations dealt.
4. Role of microbes in worms and in decomposition is discussed.
5. Vermiculture products and their benefits in agriculture practice, economics of vermitechnology along with the practical difficulties are included.
6. Students will be trained on how to maintain a small vermicompost bin as a simple method for converting the Kitchen waste.

UNIT I

Introduction to Vermitechnology, definition and history, general characters of Annelida, the habitat of earthworm (soil), diversity of earthworms, collection of earthworms, preservation of earthworms. Interaction of earthworms with other organisms. Vermitechnology and waste management, role of earthworms on ecology, an eco-friendly approach to sustainable agriculture.

UNIT II

Vermiculture techniques, advantages of vermiculture, vermicomposting technology, methods of vermicomposting, large scale manufacture of vermicompost, worm casts, vermicompost, vermiwash, vermiwash production techniques, role of earthworms in soil fertility, use of vermicompost for crop production, use of vermicompost in land improvement and reclamation, potentiality of vermibiotechnology in India

UNIT III

Role of earthworms in waste management, solid wastes an option for resource recovery, expert system for hotel waste management, evaluation of nutritional status of vermicompost and growth response of some forest tree species to its application in a nursery, vermifilter, earthworm as farmer's friend, earthworms as bioreactors, organic farming, influence of chemical inputs on earthworm activity, vermiculture for waste reduction, economic importance of earthworms.

UNIT IV

Earthworms and microorganisms, The effects of earthworms on the number, biomass and activity of microorganisms. Importance of microorganisms as food for earthworms. Dispersal of microorganisms by earthworms. Role of intestinal microbes of earthworms on the

decomposition of organic wastes. Field sampling – Passive methods, counting of mass and biomass estimation.

UNIT V

Effect of vermicompost application on soil and plant growth, vermicompost as a organic manure a good substitute of fertilizers. Influence of pests and microbes on vermiculture, measures to control them. Marketing of vermicomposting products and financial support by governments and NGOs for vermiculture.

REFERENCES

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2. Christy, M. V. (2008) Vermitechnology, 1st edition, MJP Publishers.
3. Dash, M. C. (2012) Charles Darwin's Plough Tool for Vermitechnology, I.K.. International Publishing House Pvt Ltd. New Delhi, India.
4. Kumar, A. (2005) Verms and Vermitechnology, APH Publishing.
5. Lekshmy, M. S., Santhi R. (2012) Vermitechnology, Sara Publications, New Delhi, India,
6. National Institute of Industrial Research, (2010): The Complete Technology Book on Vermiculture and Vermicompost, Published by National Institute of Industrial Research, Delhi-7, India.
7. Sinha, R. K. et.al (2010) Vermitechnology-The Emerging 21st Century Bioengineering technology for sustainable development and protection of human health and environment-Review, Dynamic Soil and Dynamic Plant, Global Science Books.
8. Sharma S. et .al, (2009) Earthworm and Vermitechnology –Review, Dynamic Soil and Dynamic Plant, Global Science Books.